

# A Guide to the Prairie Science Class

An Education Partnership Between  
The Prairie Wetlands Learning Center  
And  
The Fergus Falls Independent School District 544



## Our Model: Lewis and Clark's Corps of Discovery

With the words below, President Thomas Jefferson set in motion the Lewis and Clark expedition of 1804-1806. The Corps of Discovery, as it would be called, epitomized the rising glory of the United States--its sense of limitless possibilities and unparalleled opportunities.

*Washington D.C., June 20, 1803*

*To Meriwether Lewis Esquire, Captain of the first regiment of Infantry of the United States of America.*

*The Object of your mission is to explore the Missouri river & such principal stream of it as by it's course and communication with the waters of the Pacific ocean, whether the Columbia, Oregon, Colorado or any other river may offer the most direct & practicable water communication across this continent for the purpose of commerce.*

On May 14, 1804, the Expedition for North West Discovery, consisting of more than 30 enlisted men, plus a number of hired hands, embarked from their winter camp near St. Louis, bound for the Pacific Ocean at the mouth of the Columbia River. After two years, four months, and ten days, the Corps of Discovery returned triumphantly to St. Louis on September 23, 1806.

## The Corps of Discovery and the Prairie Science Class

*I will cheerfully join you in an 'official Charrector' as mentioned in your letter, and partake of the dangers, difficulties, and fatigues, and I anticipate the honors & rewards of the result of such an enterprise...*

Clark to Lewis, July 29, 1803

**Explore** and **discover** are key words for Prairie Science Class (PSC) students for they have much in common with this legendary legion of explorers and discoverers.

- The Corps of Discovery prepared for their journey and PSC students use time in the Learning Center to prepare for their outdoor explorations and maximize their learning.
- They were scientists, and so are PSC students.
- The Corps explored and discovered. PSC students explore the prairie and make discoveries every day.
- Some of the equipment used by the Corps of Discovery included mathematical instruments (compass, thermometers), clothing (knapsacks, warm weather clothing), and a traveling library (books on botany, history, minerals, astronomy, scientific classification, as well as dictionaries and maps). The PSC uses modern versions of the same types of instruments, clothing, and books including field guides.

- They observed the world around them. They measured and mapped. PSC students measure and map the land and its plants in their outdoor classroom.
- They kept journals and field notes and sketches. PSC students record their field observations in their journals as well.
- They worked together as a disciplined team. Each member filled crucial roles depending upon their abilities to lead, hunt, interpret other languages, cut wood, and share specialized craftsman skills. The PSC team consists of teachers who lead and students who participate and learn as well as PWLC staff that periodically lead and assist in the field.
- The Corps of Discovery was supported as a cooperative effort between the U.S. military, the U.S. executive office of the President, and fortunately for them, numerous Native tribes. A broader team supports the PSC as well. It is a partnership between the U.S. Fish and Wildlife Service's Prairie Wetlands Learning Center (PWLC) and the Fergus Falls Independent School District 544. Additional partners include the Friends of the Prairie Wetlands Learning Center, Fergus Falls Wetland Management District, U.S. Fish and Wildlife Service Region 3 Office, Fergus Falls Education Foundation, Mildred R. Thompson PWLC Prairie Science Magnet Class Endowment Fund, Fergus Falls Fish and Game Club, and the Minnesota Department of Natural Resources. Additional contributors have included Vinje Family, Bittenbender Family, Otter Tail Power Company, Ottertail Coaches, Toshiba Foundation, and the National Fish and Wildlife Foundation.

Because of the close parallels, PSC students become an extension of the original Corps and are named the Corps of Discovery II (2003-4), Corps of Discovery III (2004-5), Corps of Discovery IV (2005-6), and so on.

## Mission and Goals

*So come forth, into the light of things, let Nature be your teacher.*  
William Wordsworth, 1770-1850, English Poet

The mission of the Fergus Falls Middle School Prairie Science Class is to use the local prairie wetlands ecosystem as an integrating and motivating context to engage fifth-grade students in science, math, and writing through real world, field-based learning experiences.

Or, to parallel President Jefferson's directive to Lewis and Clark and follow the PSC's established model:

*The Object of the PSC mission is to explore the Prairie Pothole Ecosystem and such principal locality as the Prairie Wetlands Learning Center by its course of study in streams of multiple subject areas which flow together and offer the most*

*direct and practicable method of teaching across this continent for the purpose of effective student learning.*

The goals of the Prairie Science Class are to:

- Develop students' knowledge and skills in math, writing, and science through an integrated, field-based study of the local prairie wetlands ecosystem.
- Increase student motivation and engagement through the use of authentic projects, field-based learning experiences, and a relevant local context.
- Develop students' problem-solving, communication, and technology skills through research projects involving gathering, organizing, processing, and communicating information about the prairie wetlands environment.
- Develop students' character skills and foster a stewardship ethic and a sense of civic responsibility, as the local environment becomes the avenue for emphasizing attitudes of respect, responsibility, and cooperation.

## **Partnership Coordination**

*The human community and the natural community will go into the future as a single sacred community or we will both experience disaster on the way.*

Thomas Berry, born 1914, Eco-Theologian

Two ISD 544 Teachers, one or more Student Teachers, a full-time Intern when available, and high school volunteers are stationed at the Prairie Wetlands Learning Center. Two ISD 544 Teachers are at the Fergus Falls Middle School, teaching the Prairie Science Class students when they are not at the Prairie Wetlands Learning Center (PWLC). In addition, Environmental Education Specialists from the PWLC assist with the Prairie Science Class as their schedules permit.

PSC Teachers at the PWLC provide a weekly lesson plan chart to the Prairie Wetlands Learning Center employee liaison. That employee provides the PSC Teachers with the weekly PWLC calendar schedule. Effort is made by both partners to remedy any conflict of use of indoor and outdoor teaching spaces and equipment needs. PSC teachers and staff can use PWLC equipment when available. The School District supplies PSC's office supplies. Photocopying is done at Middle School when possible; PSC account number is used when photocopying at the PWLC

PSC Teachers schedule any PWLC educational programs through the PWLC Scheduler. The Supervisory Park Ranger assigns PWLC staff to teach. Special programs may be scheduled directly between PSC Teachers and appropriate PWLC staff.

PWLC staff must meet the needs of groups visiting the PWLC for field trips from other schools as well as other assigned projects. However, there is an ongoing, daily need for PSC adult field leaders and whenever PWLC staff members are available to assist, they contact PSC Teachers directly and schedule their time on the PWLC staff calendar.

The PWLC employee liaison coordinates and administers PSC evaluation plans and needs with other PSC team members including PWLC Park Rangers and Interns, PSC Teachers and Student Teachers, Fergus Falls Middle School Principal and seventh grade Science Teachers, and any adjunct advisors.

## Overall Program Operation

*Earth, in the dazzling variety of its life, is still a little-known planet. . . .  
Microwildernesses exist in a handful of soil collected almost anywhere on earth.  
They are ... still unvisited.... A lifetime can be spent in a Magellanic voyage  
around the trunk of a single tree.*

Edward O. Wilson, born 1929, American Naturalist

One hundred fifth grade students spend two hours at the Prairie Wetlands Learning Center daily, 50 students in the morning from 8:25 am – 10:35 am and 50 students in the afternoon from 1:05 pm – 3:05 pm. Students spend the rest of the school day at the Fergus Falls Middle School, where the remainder of math concepts and additional reading, social studies, physical education, and health are covered.

While the Prairie Science Class is housed in both of the Center's classrooms, much of the learning time is spent in the field. The environmental education programs traditionally offered by the Prairie Wetlands Learning Center continue, with the Prairie Science Class complementing, rather than replacing, the existing environmental education programs offered to schools and other educational groups.

## Indoors

*While we are born with a sense of curiosity and wonder, and our early years are full of the adventure they bring, I know such inherent joys are often lost.  
I also know that, being deep within us, their latent glow can be fanned to flame again by awareness and an open mind.*

Sigurd Olson, 1899-1982, American Naturalist

## Arrival

- Students have assigned seating on the bus and are encouraged to watch weather and sky conditions on the ride over.

- They are greeted by PSC Student Teachers, Interns, or Teachers upon arrival from the middle school, and they walk across the deck, down the deck stairs, and enter the lower lounge doors.
- They store their jackets in the Trail Supply room or in the hallway on the hooks near the PSC classrooms.
- The morning class recites the pledge of allegiance. In both morning and afternoon sessions, teachers take attendance and students record current weather conditions each day. This start to each class is called PAW (pledge-attendance-weather).
- PSC teachers report attendance to the PWLC receptionist daily for PWLC program attendance log and communicate attendance information directly with the middle school.

### **Dismissal**

- In the event of late arrival or early dismissal of individual students, a PSC Teacher is responsible for signing them in and out. A PSC Teacher is also responsible for reporting this information to the Middle School.
- A student arriving late must be accompanied by the parent from the parking lot to the classroom and may not be simply dropped off alone.
- A student waiting for a ride must wait in the Bluestem Store under adult supervision and the parent picking up the student must come into the store.
- A student may not walk to the parking lot to meet a ride or wait in the parking lot for a ride unless accompanied and supervised by a PSC teacher.

### **Texts**

- PSC textbooks are Writers Express and Discovery Works. These texts are used to augment the outdoor classroom where phenology often directs field work activities.

### **Classroom Management**

- Students may leave to use the restroom or get a drink during (P)AW if their weather notebook is already out and open. Students must otherwise ask their teacher for permission to leave the class as needed to use the restrooms or get a drink of water.
- PSC students must always stay with their class or small group while at the Center. They may not go upstairs alone, shop, or visit the office or exhibits without a PSC adult.
- Students must have a teacher/support staff in sight at all times; students are not unsupervised at any time.

### **Adult Identification**

- All PSC staff and adults that help with the students have an easily visible badge/ID; students are to interact with adults wearing the badge or FWS uniform only.

### **Injuries**

- Student injuries are handled in the same manner as injuries on other PWLC programs.
- Minor/common hazard injuries such as stings are treated by PSC teacher or staff; more serious injuries are handled according to School District policies.
- The PWLC Receptionist fills out necessary FWS forms on a case-by-case basis.

### **Missing Students**

- Missing students are handled according to PWLC procedures for missing students (see PWLC operations manual).
- In order to effectively handle emergencies, the PSC Teachers carry a cell phone or a PWLC radio.

### **Parent Communication**

- The PSC Teachers provide a letter to parents describing common hazards/risks associated with the field-based nature of this program. The letter asks parents to list any health concerns that staff should be aware of (and if this information can be shared with PWLC staff).
- PSC Teachers also provide a monthly newsletter to parents, PWLC staff, and key stakeholders.

### **Emergencies**

- In accordance with school district policy, the PSC must be prepared for emergencies and periodically engage in fire drills and tornado drills. Two fire drills are scheduled yearly.
- Fire exits include the south and north doors which are the doors located closest to the PSC classrooms. Students and staff meet at the amphitheater in the event of a fire or fire drill.
- During a tornado warning or drill, the PSC meet at the lower level bathrooms near the water fountains.

### **Phone**

- PWLC refers phone calls relating to the PSC to the PSC office phone, 218-998-0878.
- Messages are delivered in person or by radio when phone calls are of an emergency nature.

## **Holidays and Teacher Absence**

- During Federal holidays, the PSC operates as usual, and the PSC teachers are responsible for opening and closing the building.
- In the event of a PSC Teacher absence, it is the responsibility of the Middle School, District, or the PSC Teacher to ensure a substitute is scheduled.

## **Outdoors**

*If a child is to keep alive his inborn sense of wonder, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in.*

Rachel Carson, American Scientist and Naturalist

## **Field Group Structure**

- PSC students spend some time in the field every day, even in the rain and cold and snow, even if only for ten minutes. As long as the weather is safe (no lightning or weather warnings for example), learning can take place in the outdoor classroom.
- Whenever possible, students are split into small groups led by one adult for field work.
- To facilitate quick organization for field activities, small groups are often named after the “big three” prairie grasses (switchgrass, big bluestem, and Indian grass) or other prairie biota such as mammals or insects.
- Composition of groups may change weekly depending upon availability of adults.
- Because of special individual needs, certain students may sometimes be assigned with certain PSC Teachers.

## **Preparation**

- Adult leaders must be sure to count the number of students in their small group before entering the field and return with the same number.
- Adults also bring a form of communication into the field whenever possible such as a radio or cell phone in case of an emergency (which is highly unlikely but best to be prepared for).
- Adult leaders also carry a small first aid kit for minor cuts, scrapes, splinters, or bee stings. Students who are allergic to bee stings are expected to carry and administer their own antidote.

## **Field Instructions**

- PSC teachers provide specific instructions to students and adult leaders for field activities. Examples may include a Seton Watch, measuring distances on land or lengths of plants or animals, Discovery Hikes, monarch tagging, duck banding, etc. However, care is taken to avoid getting too patterned with field activities.



## **Use of Trails**

- Students must use official trails in spring and summer to protect ground-nesting birds.
- Students may walk off-trail in fall and winter during field activities as directed by their adult leader.

## **Communication in the Field**

- Adult leaders determine and communicate a signal to the students indicating the end of independent field work.
- When sitting or laying in dense cover, adult leaders remind students to notice who and where their immediate neighbors are located. They are also reminded to keep their eyes open.

## **Concluding Field Experiences**

- Field work may end with thoughtful reflections and sharing during Circle Time.
- Everyone in the small group sits in a circle, usually in the field. Sitting in a circle, all are equally important. A circle represents the cycles of life (seasons, days/nights, sun/moon, nests, burrows, etc.).
- A talking stick (or rock or grass or whatever is handy and selected) is passed around the circle. The person holding the talking stick may speak to share a discovery, surprise, or celebration. Students are typically encouraged to share using complete sentences instead of one-word answers.
- To show respect and attentiveness to the speaker, all other students give good eye contact to that person and sit quietly.

## **Field Protocol**

*The essence is to travel gracefully rather than to arrive.*

Enos Mills, 1870-1922, American Naturalist

## **Goal**

When learning in the outdoors, the PSC practices behavior that allows observation, thinking, and communication by all who use the outdoor learning site, and that shows the PSC respects and protects all parts of the natural world.

## **On the Trail, PSC Students ...**

- Walk slowly and quietly behind leader on established trails.
- When we are not on the established trails, spread out so we don't create additional trails through the prairie.
- Watch and obey signals and directions from the leader.
- Keep hands to self and leave others alone.

- Practice getting in the moment.
- Practice naturalist skills. A naturalist is quiet, curious, respectful, inquisitive (questioning), observant, full of wonder, patient, and prepared.
- Look for surprises, beauty, delight, and intricate design.
- Practice observing or thinking silently, without moving, each time they go outside if possible. This promotes observation, patience, concentration, thought, artistic expression, communication and judgment. The Seton watch is an effective example of this.
- Leave the PWLC and habitat better than they found it.
- Limit use of human-made markers and materials to keep the prairie looking natural.
- Protect wildlife, plants, and animal homes.
- Wait outside the PWLC for instructions upon returning to the Learning Center. Clean feet if needed on the boot brush.
- Walk inside quietly (low voices) as others are using the Center. Hang up coat/boots if needed. Return to their seats.

### **On the Trail, PSC Adult Field Leaders ...**

- Bring only a **few** handy devices placed in your hand, pocket, or backpack for safety, communication with other field leaders, to help focus attention, and to make concepts easier to understand: first aid kit, radio or cell phone, needed equipment, map, camera, pencils, clipboard, seasonal field guides.
- Coordinate watches and return times. Be responsible for getting groups back on time.
- Count the number of students in their group before going into the field and return with the same number.
- Set clear expectations and check for understanding.
- Have a focus. Remember leaders cannot teach students everything about any topic. Keep the main idea or learning objective in mind.
- Establish clear boundaries and encourage everyone to participate, share duties, practice observing, record and report, and return when done.
- Think of creative ways to hold your group's attention while moving from site to site. Walk like the animals do – great blue herons, crows, and ducks all move with interesting gaits. Have a walking question such as something to count on the way to the destination. Or ask students to look for surprises, beauty, delight, or intricate design.
- Try walking backwards en route to the destination. It requires a slower pace, and the leader can observe behavior in the group as needed.
- Agree on and practice signals to stop, listen to leader, be quiet, observe something, discuss (such as snapping fingers, quiet coyote, etc.).
- Pass it on (walking by and handing off).
- Pass half the group by a point of interest. Then double back to the middle to discuss the item once everyone has arrived.

- Stand and stare at something without talking to get the students' attention and wait till the group is all quiet.
- Make sure everyone is able to see (one circle or squatting inside circle) and provide comfortable positions. Stand so the sun is in their face (not the students' faces). Squinting is uncomfortable and a distraction to student attention.
- Avoid wearing sunglasses when possible. A cap provides a visor to shade your eyes while allowing students to maintain eye contact.
- Deal with distractions (solve them or accept them).
- Remember that the oak savannah could be a place of risk due to the potential of falling branches. There are also girdled trees that may fall down in the wind.
- Share their enthusiasm. Nothing is more contagious than enthusiasm. Sometimes students need a reminder that it is a good thing to be excited about learning.
- Encourage curiosity and ask questions. Encourage students to ask questions and point out what they see. It is okay to say, "I don't know" – field leaders do not need to know all of the answers to questions. The students do not see field leaders as the only source of knowledge. Let them ask AND answer questions. This encourages critical thinking and participation in the activity. Give the group at least five seconds to think before you give them the answer or before you call on someone. This allows students time to think more deeply about your question and consider several alternative answers. Encourage students to write down their questions and make some observations that may help them to answer their own questions back in the Learning Center.
- Acknowledge respectful behavior. Encourage students to engage in cooperation by working together, in caring and respect by showing concern for others and the environment, and in responsibility by being accountable for their individual actions. Thank students who are being respectful of nature and others.
- Take advantage of teachable moments offered by the outdoor classroom can offer.
- Inform PSC Teachers of any significant behavior issues as well as commendable behavior so that appropriate consequences and rewards may be given (agenda marks and pencils, for example).

### **The PSC Respects and Protects Nature (Watch, learn, leave for others)**

- **Collecting:** Leave things where they are – but pick up litter.
- **Off trail:** Follow instructions given by the adult leader. Fan out across the landscape to avoid creating trails for nest predators.
- **Observing:** observe quickly for things that move - record as you notice things. Things to look for size, shape, color, action, location - don't forget sound, smell, and feel. Because of many different allergies, tasting is not allowed.

- **Collecting:** Generally the PSC does not collect; the exception is for prairie restoration and other short-term study as needed.
- **Restoration:** The PSC is involved with prairie habitat restoration, a major learning activity.

### **PSC Students Care for Equipment**

- **Personal equipment.** Students use hooks. Book bags are stored beneath hooks, and other items go in cubbies.
- **Group equipment** (such as thermometers, meter sticks, clipboards, rulers). Students share responsibilities. Everyone is able to do the task at some point, and everyone is responsible to make sure the equipment comes back from the field.
- **Special equipment.** Students learn how to use it, protect it in the field, and return to the classroom (ex: binoculars, skis, snowshoes).

### **Weather Adjustments**

- **Rain gear** includes rain jacket, mud boots, and rain pants. Learning happens in the rain too. If weather conditions are unsafe (such as lightning is sighted), the PSC stays indoors.
- **Cold/snow.** The PSC dresses for cold (insulated boots, scarves, snow pants, mittens or gloves, and stocking caps). The PSC students and staff check each other for signs of overexposure to cold and question one another about the level of coldness. The PSC never “cries wolf;” that is not acceptable. The PSC stays inside if wind chill values are colder than -15 degrees F.
- **Bugs.** The PSC brushes away bugs rather than swatting them or using repellent- it’s quieter and less painful! During the school year, the possibility of biting insects is greatly reduced.

## **Resources**

*And the world cannot be discovered by a journey of miles, not matter how long, but only by a spiritual journey, very arduous and humbling and joyful, by which we arrive at the ground at our feet, and learn to be at home.*

Wendell Berry, born 1934, American Poet

[www.lewis-clark.org](http://www.lewis-clark.org)

[www.pbs.org/lewisandclark](http://www.pbs.org/lewisandclark)

<http://www.fws.gov/midwest/Horicon>

<http://www.fws.gov/midwest/pwlc>

The Nature Fakir’s Handbook, Presentation Skills for Interpretive Naturalists, by Kathleen Harris Regnier

Lewis and Clark, the Adventure Into the West by John Hinde Curteich, Inc.

Wolf Ridge Environmental Learning Center

Past Experience with the Prairie Science Class



The Grand Show

This grand show is eternal.  
It is always sunrise somewhere;  
The dew is never all dried at once;  
A shower is forever falling;  
Vapor is ever rising.  
Eternal sunrise, eternal sunset, eternal dawn and gloaming,  
on sea and continents and islands,  
each in its turn,  
as the round earth rolls.

John Muir, American Naturalist, 1838-1914